FILE 'HOME' ENTERED AT 15:38:53 ON 10 DEC 2004

=> file biosis caplus caba agricola
=> s disease and resistance and plant and review
L1 3384 DISEASE AND RESISTANCE AND PLANT AND REVIEW

=> s l1 and gene
L2 955 L1 AND GENE

=> s l2 and py>1992
L3 804 L2 AND PY>1992

=> duplicate remove l3
L4 714 DUPLICATE REMOVE L3 (90 DUPLICATES REMOVED)

=> d ti 1-10

L4 ANSWER 1 OF 714 CABA COPYRIGHT 2004 CABI on STN
TI Pathogenesis-related proteins and their roles in **resistance** to fungal pathogens.

L4 ANSWER 2 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI Induced systemic **resistance** and promotion of **plant** growth by bacillus spp

L4 ANSWER 3 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI Guarding the goods. New insights into the central alarm system of plants

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TI How are **plant** viruses using host factors? What virus **resistance** by mutation of translation initiation factor genes indicates

L4 ANSWER 5 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI Defense reaction-inducing mechanism of plants via flagellin recognition. Ingenious defense system of plants is being revealed. Evolutionary relation with mammalian natural immunity?

L4 ANSWER 6 OF 714 CABA COPYRIGHT 2004 CABI on STN
TI Pathogen-induced **resistance** and alarm signals in the phloem.

L4 ANSWER 7 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI NPR1: The spider in the web of induced **resistance** signaling pathways

L4 ANSWER 8 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI Advances in study of RNA interference and its botanical significance

L4 ANSWER 9 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN
TI Advances in the cloning candidate **disease** resistant genes with the RGA cloning method

L4 ANSWER 10 OF 714 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
TI Factors affecting Agrobacterium-mediated genetic transformation in fruit and nut crops - an overview

=> s l4 and clon?
L5 125 L4 AND CLON?

=> d ti 1-10

L5 ANSWER 1 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Dothistroma (red-band) needle blight of pines and the dothistromin toxin: a **review**.

L5 ANSWER 2 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Advances in Mlo **gene** resistant to powdery mildew in barley.

L5 ANSWER 3 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Downy mildew of Arabidopsis thaliana caused by Hyaloperonospora parasitica (formerly Peronospora parasitica).

L5 ANSWER 4 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Isolation strategies for **plant** **resistance**-related genes.

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TI Recent advances in research on **disease resistance** genes in defence system of **plant**.

L5 ANSWER 6 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Avirulence proteins of **plant** pathogens: Determinants of victory and defeat.

L5 ANSWER 7 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Genetic engineering of plants to enhance **resistance** to fungal pathogens: A **review** of progress and future prospects.

L5 ANSWER 8 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Molecular approaches to the study of sterol biosynthesis inhibitor **resistance** mechanism.

L5 ANSWER 9 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI **Plant resistance** genes: Their structure, function and evolution.

L5 ANSWER 10 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Molecular approaches to the study of sterol biosynthesis inhibitor **resistance** mechanism.

=> d bib abs 4 5 9

L5 ANSWER 4 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
AN 2003:208065 BIOSIS
DN PREV200300208065
TI Isolation strategies for **plant resistance**-related genes.
AU Yu Ling [Reprint Author]; Wang Lai [Reprint Author]; Niu Ji-Shan; Chen Pei-Du
CS College of Life Science, Northwest Normal University, Lanzhou, 730070, China
SO Xibei Zhiwu Xuebao, (Nov 2002) Vol. 22, No. 6, pp. 1494-1503. print.
ISSN: 1000-4025 (ISSN print).
DT Article
LA Chinese
ED Entered STN: 30 Apr 2003
Last Updated on STN: 30 Apr 2003
AB Great achievements have been made in the technology for **plant gene** isolation. This paper will **review** the new developments of strategies and approaches for the **plant disease resistance**-related **gene** isolation. The common and different aspects among these techniques and their advantages and defects, as well as their applications and prospects in **plant** are discussed.

L5 ANSWER 5 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
AN 2002:588853 BIOSIS
DN PREV200200588853
TI Recent advances in research on **disease resistance** genes in defence system of **plant**.
AU Wan Li-hong [Reprint author]; Zhou Yi-Hua [Reprint author]; Chen Zheng-Hua [Reprint author]
CS Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, 100101, China
SO Yichuan, (July, 2002) Vol. 24, No. 4, pp. 486-492. print.
ISSN: 0253-9772.
DT Article
General Review; (Literature Review)
LA Chinese
ED Entered STN: 13 Nov 2002
Last Updated on STN: 13 Nov 2002
AB This **review** comments on recent advances in research of **disease resistance** genes(R Genes) in defence system of plants. The R genes **cloned** up to date are summarized and classified roughly into four classes listed in the Table 1. The location and the fouction of the R proteins, i. e., the expressed products of different R genes in the cells are reviewed. In addition, the polymophism of coding region of R genes, the different fashions of R **gene** arrangement on the chromosomes, and the evolution and origin of R genes are discussed.

L5 ANSWER 9 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
AN 2001:71048 BIOSIS
DN PREV200100071048
TI **Plant resistance** genes: Their structure, function and evolution.
AU Takken, Frank L. W. [Reprint author]; Joosten, Matthieu H. A. J. [Reprint author]
CS Department of Phytopathology, Wageningen University and Research Centre, Binnenhaven 9, 6709 PD, Wageningen, Netherlands
frank.takken@medew.fyto.wau.nl
SO European Journal of Plant Pathology, (October, 2000) Vol. 106, No. 8, pp. 699-713. print.
ISSN: 0929-1873.
DT Article
LA English
ED Entered STN: 7 Feb 2001
Last Updated on STN: 12 Feb 2002
AB Plants have developed efficient mechanisms to avoid infection or to mount responses that render them resistant upon attack by a pathogen. One of the best-studied defence mechanisms is based on **gene**-for-**gene resistance** through which plants, harbouring specific **resistance** (R) genes, specifically recognise pathogens carrying matching avirulence (Avr) genes. Here a **review** of the R genes that have been **cloned** is given. Although in most cases it is not clear how R **gene** encoded proteins initiate pathways leading to **disease resistance**, we will show that there are clear parallels with **disease** prevention in animal systems. Furthermore, some evolutionary mechanisms acting on R genes to create novel recognitional specificities will be discussed.

=> d ti 11-50

L5 ANSWER 11 OF 125 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Cellular recognition in **plant**-bacteria interactions: Biological and molecular aspects.

L5 ANSWER 12 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Advances in the **cloning** candidate **disease** resistant genes with the RGA **cloning** method

L5 ANSWER 13 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Research progress of tomato leaf mould resistant **gene** and molecular breeding

L5 ANSWER 14 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Engineering defense responses in crops for improvement and yield: recent advancements in in vitro **gene** transfer technology

L5 ANSWER 15 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Convergent evolution of **disease resistance** genes

L5 ANSWER 16 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Progress of **plant disease resistance gene**

L5 ANSWER 17 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The utilisation of molecular tools for rose breeding and genetics

L5 ANSWER 18 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant** protein inhibitors of invertases

L5 ANSWER 19 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Research progress on NPR1 **gene**

L5 ANSWER 20 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Progress on the studies of **plant** lesion mimic mutants and genes

L5 ANSWER 21 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular basis of Pto-mediated **resistance** to bacterial speck **disease** in tomato

L5 ANSWER 22 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant resistance** genes: molecular and genetic organization, function and evolution

L5 ANSWER 23 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Progress of map-based **cloning** of the Vf-**resistance gene** and functional verification: preliminary results from

expression studies in transformed apple

L5 ANSWER 24 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Lytic enzymes of Trichoderma and their role in **plant** defense from fungal diseases: A **review**

L5 ANSWER 25 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Soilborne viruses: advances in virus movement, virus induced **gene** silencing, and engineered **resistance**

L5 ANSWER 26 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI A novel **gene** for rust **resistance**

L5 ANSWER 27 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Analysis of the structure, function and evolution of plants **disease resistance** genes

L5 ANSWER 28 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant disease resistance** genes: recent insights and potential applications

L5 ANSWER 29 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Advances in marker-assisted selection for scab **resistance** in apple and **cloning** of the Vf **gene**

L5 ANSWER 30 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular diagnosis and application of DNA markers in the management of fungal and bacterial **plant** diseases

L5 ANSWER 31 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The silencing of (trans)genes - a mechanism of virus **resistance** in plants II. Molecular mechanism and practical application

L5 ANSWER 32 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular basis of co-evolution between Cladosporium fulvum and tomato

L5 ANSWER 33 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Towards the elucidation of the pathway leading to salicylic acid biosynthesis

L5 ANSWER 34 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular basis of recognition between Phytophthora pathogens and their hosts

L5 ANSWER 35 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Corn as a source of antifungal genes for genetic engineering of crops for **resistance** to aflatoxin contamination

L5 ANSWER 36 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular tools for improving coffee (Coffea arabica L.)

L5 ANSWER 37 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular physiology and genetics of coffee **resistance** to parasites

L5 ANSWER 38 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Dissection of defense response pathways in rice

L5 ANSWER 39 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic analysis of **plant disease resistance** pathways

L5 ANSWER 40 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Role of isozymes in pearl millet improvement (Pennisetum glaucum)

L5 ANSWER 41 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Structure, function, and evolution of **disease resistance** genes in rice

L5 ANSWER 42 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Rice genetics from Mendel to functional genomics

L5 ANSWER 43 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI NOD2 (CARD15), the first susceptibility **gene** for Crohn's **disease**

L5 ANSWER 44 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Introduction of alternated lysozyme **gene** to **plant** and application of the transgenic **plant**

L5 ANSWER 45 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Organization of genes controlling **disease resistance**

in the potato genome

L5 ANSWER 46 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Post-transcriptional **gene**-silencing: RNAs on the attack or on the defense?

L5 ANSWER 47 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Comparative genetics and **disease resistance** in wheat

L5 ANSWER 48 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular interactions between the rice blast **resistance** **gene** Pi-ta and its corresponding avirulence **gene**

L5 ANSWER 49 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic relationships specifying bacterial **disease** **resistance** in Xanthomonas-pepper interactions

L5 ANSWER 50 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular characterization of the avrBs2 **gene** of Xanthomonas campestris pv. vesicatoria and the Bs2 **gene** of pepper

=> d bib abs 50 39 38 28 27 22 15 16

L5 ANSWER 50 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:548800 CAPLUS
DN 136:273580
TI Molecular characterization of the avrBs2 **gene** of Xanthomonas campestris pv. vesicatoria and the Bs2 **gene** of pepper
AU Tai, T.; Dahlbeck, D.; Gassmann, W.; Chesnokova, O.; Whalen, M.; Clark, E.; Mudgett, M. B.; Staskawicz, B.
CS Dale Bumpers National Rice Research Center, USDA-ARS, Stuttgart, AR, 72160, USA
SO Biology of Plant-Microbe Interactions (**2000**), Volume 2, 223-226
Publisher: International Society for Molecular Plant-Microbe Interactions, St. Paul, Minn.
CODEN: BPIIAC
DT Conference; General Review
LA English
AB The **review** summarizes recent work conducted by authors related to the **gene** avrBs2 of Xanthomonas campestris vesicatoria (Xcv), and the Bs2 **disease resistance gene** from Capsicum annuum (pepper). The authors have recently developed a transient Agrobacterium-mediated expression system for AvrBs2 in pepper. Using this system they have shown that expression of avrBs2 **gene** driven from a CaMV 35S promoter specifically results in the production of a hypertensive cell necrosis in leaf cells containing the Bs2 **gene**. This data together with Agrobacterium expression data strongly indicated that the AvrBs2 protein is sufficient for eliciting the defense response and provides evidence that this protein is delivered directly to the host via the Hrp type III secretion machinery. The authors using a recently developed anti-AvrBs2 antisera, were able to detect the presence of AvrBs2 in culture filtrates of Xcv. Further, the authors in collaboration with Bob Stall and Jerry Minsavage examined 20 Xcv field isolates that apparently had lost avrBs2 activity. The anal. of said mutations showed that all mutants were compromised in both avirulence and virulence as they grew to a lesser extent, even on lines of pepper that did not contain the Bs2 **gene**. Finally, the authors employed a chromosome walking strategy to **clone** the Bs2 **disease resistance** **gene** from pepper. A single YAC **clone** was identified that contained the Bs2 locus. The **cloning** of Bs2 **disease resistance gene** now allows the authors to test the hypothesis that the transfer of a **disease** **resistance gene** from pepper will work in tomato to control this important **disease**.
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 39 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:217674 CAPLUS
DN 136:352585
TI Genetic analysis of **plant disease resistance** pathways
AU Parker, Jane E.; Aarts, Nicole; Austin, Mark A.; Feys, Bart J.; Moisan, Lisa J.; Muskett, Paul; Rusterucci, Christine
CS The Sainsbury Laboratory, John Innes Centre, Norwich Research Park, Norwich, NR4 7UH, UK
SO Novartis Foundation Symposium (**2001**), 236(Rice Biotechnology), 153-164
CODEN: NFSYF7; ISSN: 1528-2511
PB John Wiley & Sons Ltd.
DT Journal; General Review

LA English
AB A **review.** **Plant disease resistance** (R) genes are introduced into high yielding crop varieties to improve **resistance** to agronomically important pathogens. The R **gene**-encoded proteins are recognitionally specific, interacting directly or indirectly with corresponding pathogen avirulence (avr) determinants, and are therefore under strong diversifying selection pressure to evolve new recognition capabilities. Genetic analyses in different **plant** species have also revealed more broadly recruited **resistance** signalling genes that provide further targets for manipulation in crop improvement strategies. Understanding the processes that regulate both **plant**-pathogen recognition and the induction of appropriate defences should provide fresh perspectives in combating **plant disease.** Many recent studies have utilized the model **plant,** Arabidopsis thaliana. Here, mutational screens have identified genes that are required for R **gene** function and for restriction of pathogen growth in compatible **plant**-pathogen interactions. Genetic analyses of these **plant** mutants suggest that while signalling pathways are conditioned by particular R protein structural types they are also influenced by pathogen lifestyle. Two Arabidopsis defense signalling genes, EDS1 and PAD4, are required for the accumulation of salicylic acid, a phenolic mol. required for systemic immunity. The **cloning,** mol. and biochem. characterization of these components suggests processes that may be important in their **disease resistance** signalling roles.
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 38 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:217677 CAPLUS
DN 136:352586
TI Dissection of defense response pathways in rice
AU Leach, Jan E.; Leung, Hei; Wang, Guo-Liang
CS Department of Plant Pathology, 4024 Throckmorton Plant Sciences Center, Kansas State University, Manhattan, KS, 66506-5502, USA
SO Novartis Foundation Symposium (**2001**), 236(Rice Biotechnology), 190-204
CODEN: NFSYF7; ISSN: 1528-2511
PB John Wiley & Sons Ltd.
DT Journal; General Review
LA English
AB A **review.** The **cloning** of major **resistance** genes has led to a better understanding of the mol. biol. of the steps for induction of **resistance,** yet much remains to be discovered about the downstream genes that collectively confer **resistance,** i.e. the defense response (DR) genes. The pathways contributing to **resistance** in rice have been dissected by identifying a collection of mutants with deletions or other structural rearrangements in DR genes. The collection of rice mutants has been screened for many characters, including increased susceptibility or **resistance** to Magnaporthe grisea and Xanthomonas oryzae pv. oryzae. A collection of enhanced sequence tags (ESTs) and putative DR genes has been established to facilitate detection of mutants with deletions in DR genes. Arrays of DR genes will be used to create **gene** expression profiles of interesting mutants. Successful application of the mutant screen will have broad utility in identifying candidate genes involved in **disease** response and other metabolic pathways.
RE.CNT 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 28 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:251696 CAPLUS
DN 139:31290
TI **Plant disease resistance** genes: recent insights and potential applications
AU McDowell, John M.; Woffenden, Bonnie J.
CS Fralin Biotechnology Center, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA, 24061-0346, USA
SO Trends in Biotechnology (**2003**), 21(4), 178-183
CODEN: TRBIDM; ISSN: 0167-7799
PB Elsevier Science Ltd.
DT Journal; General Review
LA English
AB A **review.** **Plant disease resistance** genes (R genes) encode proteins that detect pathogens. R genes have been used in **resistance** breeding programs for decades, with varying degrees of success. Recent mol. research on R proteins and downstream signal transduction networks has provided exciting insights, which will enhance the use of R genes for **disease** control. Definition of conserved structural motifs in R proteins has facilitated the **cloning** of useful R genes, including several that are functional

in multiple crop species and/or provide **resistance** to a relatively wide range of pathogens. Numerous signal transduction components in the defense network have been defined, and several are being exploited as switches by which **resistance** can be activated against diverse pathogens.

RE.CNT 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 27 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:303123 CAPLUS
DN 138:284002
TI Analysis of the structure, function and evolution of plants **disease resistance** genes
AU Yu, Zhihua; Zhu, Shuijin; Xia, Yingwu
CS Department of Agronomy, Zhejiang University, Hangzhou, Zhejiang Province, 310029, Peop. Rep. China
SO Zhejiang Daxue Xuebao, Nongye Yu Shengming Kexueban (**2002**), 28(1), 107-113
CODEN: ZXSKFJ; ISSN: 1008-9209
PB Zhejiang Daxue Xuebao Bianjibu
DT Journal; General Review
LA Chinese
AB A **review**. Methods of **cloning disease resistance** genes from plants and the known classes, structural features and functions of **disease resistance** genes are described. The possible mol. mechanism of **disease resistance gene** evolution is discussed.

L5 ANSWER 22 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:702767 CAPLUS
DN 139:240886
TI **Plant resistance** genes: molecular and genetic organization, function and evolution
AU Shamray, S. N.
CS Dep. Mycology Phytoimmunology, Kharkiv National Univ., Kharkov, 61077, Ukraine
SO Zhurnal Obshchei Biologii (**2003**), 64(3), 195-214
CODEN: ZOBIAU; ISSN: 0044-4596
PB Nauka
DT Journal; General Review
LA Russian
AB A **review**. Remarkable progress is achieved now in comprehension of mechanisms that determine functioning of genes responsible for plants' phytopathogenic **resistance** (genes R). **Cloning** of great number of Monocotyledones and Dicotyledones **resistance** genes show that most of proteins coded by these genes have conserved amino-acid motifs, which show high homol. to amino-acid motifs of proteins with well-designated function. Common structures for most proteins produced by genes R include nucleotide-binding site (NBS), leucine-rich repeat (LRR), site containing homol. with the cytoplasmic domains of the Drosophila Toll protein and the mammalian interleukin-1 receptor (TIR), coiled-coil structure (CC), transmembrane domain (TM), and serine/threonine protein kinase domain (PK). They are combined within the basic classes of **resistance** genes proteins as follows: TIR-NBS-LRR, CC-NBS-LLRR, NBS-LRR, PK, TM-CC, LRR-TM, LRR-TM-PK. The domains of proteins produced by **plant resistance** genes cause specific recognition of avirulence genes products and activate a signaling cascade, which gives rise to **resistance** reaction. Some classes of **plant resistance** genes probably have the same evolutionary origin as the genes that control the innate immunity of ancient animals. The evolution of **plant** R genes proceeds primarily by duplication and equal or unequal meiotic re- combination. The research on genes R function is a matter of considerable practical interest for construction of **plant** genotypes resistant against harmful organisms. The progress in comprehension of mechanisms responsible for specificity of avirulence determinants in phytopathogenic organisms recognition makes possible the creation of artificial **resistance** genes.

L5 ANSWER 15 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:540476 CAPLUS
DN 141:254962
TI Convergent evolution of **disease resistance** genes
AU McDowell, John M.
CS Fralin Biotechnology Center, Department of Plant Pathology, Physiology, and Weed Science, Virginia Tech, Blacksburg, VA, 24061-0346, USA
SO Trends in Plant Science (**2004**), 9(7), 315-317
CODEN: TPSCF9; ISSN: 1360-1385
PB Elsevier Science Ltd.
DT Journal; General Review
LA English
AB A **review**. The **resistance** genes Rpg1-b in soybean and RPM1 in Arabidopsis recognize the same bacterial avirulence protein

(AvrB). Recent map-based **cloning** of Rpg1-b has provided the first opportunity to compare functionally analogous R genes in distantly related species. Rpg1-b and RPM1 are not orthologs. Rather, these genes descended from distinct evolutionary lineages in which recognition of AvrB has probably evolved independently. This result, together with new insights into RPM1-mediated recognition of AvrB, provides an exciting opportunity to reconsider classical views on the evolution of pathogen recognition specificity.

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 16 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:491978 CAPLUS
DN 141:134741
TI Progress of **plant disease resistance gene**
AU Zhang, Xiangxi; Luo, Linguang
CS Biotechnology Center, Jiangxi Academy of Agricultural Sciences, Nanchang, 330200, Peop. Rep. China
SO Fenzi Zhiwu Yuzhong (**2003**), 1(4), 531-537
CODEN: FZYEAO; ISSN: 1672-416X
PB Fenzi Zhiwu Yuzhong Bianjibu
DT Journal; General Review
LA Chinese
AB A **review**. With the development of mol. biol. and its widely application in **plant** pathol., about 40 **plant disease resistance** genes were **cloned** subsequently. Research of the function and structure of **plant** R **gene** would benefit to understand of the **plant** - parasite interaction and formulated effective measure to control the **plant disease**. This paper summarized the strategy of **cloning**, structure and function, mol. mechanism of those **plant disease resistance** genes. The **plant** mol. breeding of genetic transformation of **plant disease resistance gene** was also discussed.

=> d ti 51-125

L5 ANSWER 51 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Pathogenesis-related proteins and their genes in cereals

L5 ANSWER 52 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Knowing the dancer from the dance: R-**gene** products and their interactions with other proteins from host and pathogen

L5 ANSWER 53 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Cloning** of the **plant resistance** genes and their structure and function

L5 ANSWER 54 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Process and prospective on **plant disease resistance** engineering

L5 ANSWER 55 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Emerging technologies and their application in the study of host-pathogen interactions

L5 ANSWER 56 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Function maps of potato

L5 ANSWER 57 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Cladosporium fulvum, cause of leaf mold of tomato

L5 ANSWER 58 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Nematode parasitism genes

L5 ANSWER 59 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant resistance** to pathogenic agents

L5 ANSWER 60 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Cloning** of defense related genes against pathogens in forest trees

L5 ANSWER 61 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The plantibody approach: expression of antibody genes in plants to modulate **plant** metabolism or to obtain pathogen **resistance**

L5 ANSWER 62 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Resistance** genes and the perception and transduction of elicitor signals in host-pathogen interactions

L5 ANSWER 63 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetics of **disease resistance**: Basic concepts and application in **resistance** breeding

L5 ANSWER 64 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Recent advances in **cloning** of **plant disease** resistant **gene**

L5 ANSWER 65 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Strategy for protection against diseases in plants

L5 ANSWER 66 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Comparative genetics of **disease resistance** within the Solanaceae

L5 ANSWER 67 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Unraveling R **gene**-mediated **disease resistance** pathways in Arabidopsis

L5 ANSWER 68 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The impact of DNA molecular markers on the study of **plant disease** caused by fungi

L5 ANSWER 69 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Mechanisms and pathways of **plant** systemic acquired **resistance**

L5 ANSWER 70 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genes involved in **plant**-pathogen interactions

L5 ANSWER 71 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Recombination: from genetic towards physical distances: high resolution mapping of **plant resistance** genes

L5 ANSWER 72 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant disease resistance**: progress in basic understanding and practical application

L5 ANSWER 73 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Development of fungus-resistant plants

L5 ANSWER 74 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic transformation of Duboisia species

L5 ANSWER 75 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Avirulence genes

L5 ANSWER 76 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Clusters of **resistance** genes in plants evolve by divergent selection and a birth-and-death process

L5 ANSWER 77 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fungal avirulence genes: Structure and possible functions

L5 ANSWER 78 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The status and strategy of studies on diseases **resistance gene** in trees

L5 ANSWER 79 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular mechanisms involved in bacterial speck **disease resistance** of tomato

L5 ANSWER 80 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Root-knot nematode **resistance** genes in tomato and their potential for future use

L5 ANSWER 81 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic dissection of R **gene** signal transduction pathways

L5 ANSWER 82 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Comparative analysis of cereal genomes

L5 ANSWER 83 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Disease resistance** genes and pathogen recognition mechanisms

L5 ANSWER 84 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetics of **plant**-pathogen interactions

L5 ANSWER 85 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Arabidopsis: a weed leading the field of **plant**-pathogen

interactions

L5 ANSWER 86 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Resistance** to root-knot nematodes in tomato: towards the molecular **cloning** of the Mi-1 locus

L5 ANSWER 87 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genes encoding for chitinolytic enzymes from biocontrol fungi: applications for **plant disease** control

L5 ANSWER 88 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Recombination: molecular markers for **resistance** genes in major grain crops

L5 ANSWER 89 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Advances in the molecular genetic analysis of the flax-flax rust interaction

L5 ANSWER 90 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular basis of **resistance** to **disease** in plants: Structure and function of **plant disease** **resistance** genes

L5 ANSWER 91 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The molecular basis of **disease resistance** in rice

L5 ANSWER 92 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Alien introgression in rice

L5 ANSWER 93 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Mapping **disease resistance** genes in tomato: a toy for the geneticist or a joy for the breeder?

L5 ANSWER 94 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Inhibitor of virus replication (IVR) associated with the local lesion response in tobacco: possibilities to engineer resistant plants

L5 ANSWER 95 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The role of polygalacturonase, PGIP and pectin oligomers in fungal infection

L5 ANSWER 96 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular **cloning** of **plant disease** **resistance** genes

L5 ANSWER 97 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Gene**-encoded antimicrobial peptides from plants

L5 ANSWER 98 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genomic organization of **disease** and insect **resistance** genes in Maize

L5 ANSWER 99 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Plant disease resistance** genes: unraveling how they work

L5 ANSWER 100 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Genetic analysis of bacterial **disease resistance** in Arabidopsis and **cloning** of the RPS2 **resistance** **gene**

L5 ANSWER 101 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Isolation and **cloning** of **plant disease** **resistance** genes

L5 ANSWER 102 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Movers and shakers: maize transposons as tools for analyzing other **plant** genomes

L5 ANSWER 103 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Use of Arabidopsis thaliana defense-related mutants to dissect the **plant** response to pathogens

L5 ANSWER 104 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI The **disease-resistance gene** Pto and the fenthion-sensitivity **gene** Fen encode closely related functional protein kinases

L5 ANSWER 105 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI Molecular genetics of **plant disease resistance**

L5 ANSWER 106 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN

TI   Isolation of **disease resistance** genes from crop plants

L5   ANSWER 107 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Piece de **resistance**: novel classes of **plant** **disease resistance** genes

L5   ANSWER 108 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Clusters of **resistance** genes in lettuce: (Map-based **cloning** in non-intensively studied species)

L5   ANSWER 109 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   **Resistance** crumbles?

L5   ANSWER 110 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Avirulence genes of the tomato pathogen Cladosporium fulvum and their exploitation in molecular breeding for **disease**-resistant plants.

L5   ANSWER 111 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Prospects for the genetic manipulation of antimicrobial **plant** secondary products

L5   ANSWER 112 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Emerging strategies for enhancing crop **resistance** to microbial pathogens

L5   ANSWER 113 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   Transgenic plants resistant to diseases by the detoxification of toxins

L5   ANSWER 114 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
TI   **Plant disease resistance** genes: interactions with pathogens and their improved utilization to control **plant** diseases

L5   ANSWER 115 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Exploiting progress in **gene** technology to discover genes of interest in sugar beet.

L5   ANSWER 116 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Molecular markers for leaf rust **resistance** genes in wheat.

L5   ANSWER 117 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Breeding virus resistant potatoes (Solanum tuberosum): a **review** of traditional and molecular approaches.

L5   ANSWER 118 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   A **review** of host major-**gene resistance** to potato viruses X, Y, A and V in potato: genes, genetics and mapped locations.

L5   ANSWER 119 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   The barley mlo-**gene**: an important powdery mildew **resistance** source.

L5   ANSWER 120 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Classification and function of **plant disease** **resistance** genes.

L5   ANSWER 121 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Dead cells do tell tales.

L5   ANSWER 122 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Apple and pear biotechnology at INRA Angers.

L5   ANSWER 123 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Strategies for the **cloning** of **plant** genes conferring **resistance** to pathogens.

L5   ANSWER 124 OF 125 CABA COPYRIGHT 2004 CABI on STN
TI   Novel approaches for genetic **resistance** to bacterial pathogens in flower crops.

L5   ANSWER 125 OF 125 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN
TI   Present and future of quantitative trait locus analysis in **plant** breeding.

=> d bib abs 124 123 119 120 114 113 112 110 107 106 105 101 99 97 90 72 70 64 62 59 53

L5   ANSWER 124 OF 125 CABA COPYRIGHT 2004 CABI on STN

AN 95:177878 CABA
DN 19951610974
TI Novel approaches for genetic **resistance** to bacterial pathogens in flower crops
AU Kuehnle, A. R.; Chen, F. C.; Sugii, N.
CS Department of Horticulture, University of Hawaii, Honolulu, HI 96822, USA.
SO HortScience, (**1995**) Vol. 30, No. 3, pp. 456-461. 69 ref.
Price: Conference paper; Journal article .
Meeting Info.: Classical and molecular approaches to breeding horticultural plants for disease resistance. Proceedings of the Colloquium held at the 91st ASHS Annual Meeting, Corvallis, Oregon, 8 August 1994.
ISSN: 0018-5345
DT Journal
LA English
ED Entered STN: 19951020
Last Updated on STN: 19951020
AB Examples given in this **review** on engineered **resistance** to bacteria include **cloning resistance** genes from plants via molecular techniques and studies using non-**plant** antibacterial genes. Current research on the control of bacterial blight (Xanthomonas campestris pv. dieffenbachiae) in Anthurium and prospects for future developments are covered in some detail. Current control measures for bacterial blight included strict sanitation and in some cases antibiotic treatments. Attempts to transfer systemic **resistance** from A. antioquiense to the cultivated A. andreanum produced resistant F1 hybrids. Backcrossing to A. andreanum to produce cultivated varieties with horticulturally desirable characteristics takes many years because it is a perennial crop, with a long juvenile stage (2 to 3 years) and slow seed maturation (6 months). As the genetics of the available **resistance** was not properly understood, resistant cultivars which were released soon became susceptible to blight. Two cultivars, Rudolph and UH1060, were transformed with vectors containing antibacterial genes and synthetic derivatives from Hyalophora cecropia and bacteriophages. Regenerated plants showed a delay in **disease** symptom development compared with non-transformed controls.

L5 ANSWER 123 OF 125 CABA COPYRIGHT 2004 CABI on STN
AN 97:103059 CABA
DN 19971608078
TI Strategies for the **cloning** of **plant** genes conferring **resistance** to pathogens
AU Yao QuanHong; Huang XiaoMin; Liu ZongZhen; Jiang Lin; Dai FuMing; Yao, Q. H.; Huang, X. M.; Liu, Z. Z.; Jiang, L.; Dai, F. M.
CS Plant Protection Research Institute, Shanghai Academy of Agricultural Sciences, Shanghai 201106, China.
SO Acta Agriculturae Shanghai, (**1995**) Vol. 11, No. 2, pp. 91-96. 48 ref.
ISSN: 1000-3924
DT Journal
LA Chinese
SL English
ED Entered STN: 19970916
Last Updated on STN: 19970916
AB This **review** examines several biotechnological approaches to transferring pathogen **resistance** genes into target crops. These include shotgun **cloning**, **cloning** by transposon tagging, T-DNA insertional mutagenesis, RFLPs, chromosome walking and **cloning** of genes encoding receptors for race-specific elicitors.

L5 ANSWER 119 OF 125 CABA COPYRIGHT 2004 CABI on STN
AN 2001:49754 CABA
DN 20003027799
TI The barley mlo-**gene**: an important powdery mildew **resistance** source
AU Lyngkjaer, M. F.; Newton, A. C.; Atzema, J. L.; Baker, S. J.
CS Plant Biology and Biogeochemistry Department, Ris<o> National Laboratory, 4000 Roskilde, Denmark.
SO Agronomie, (**2000**) Vol. 20, No. 7, pp. 745-756. 60 ref.
Publisher: EDP Sciences. Les Ulis
ISSN: 0249-5627
CY France
DT Journal
LA English
SL French
ED Entered STN: 20010608
Last Updated on STN: 20010608
AB This **review** briefly summarises recently generated knowledge about mlo powdery mildew (Erysiphe graminis f.sp. hordei) **resistance** in barley. Barley mlo **resistance** has remained highly effective since commercial spring barley varieties with the **resistance** were first released in 1979. Currently, this **resistance** is the most used **resistance** in spring barley

grown throughout Europe. Barley mlo **resistance** confers nearly total **resistance** against fungal penetration attempts. However, the efficiency of the **resistance** depends on several factors including epidermal cell type, host genetic background, environmental conditions and fungal genotype. Recently, the barley Mlo-**gene** has been **cloned,** but the exact function of the **gene** is not known. The Mlo-**gene** most likely regulates several mechanisms involved in penetration **resistance** against powdery mildew, and mlo mutations cause disfunction of the wild type Mlo-protein leading to increased **resistance**. The **resistance** mechanisms involved probably include earlier deposition and increased size of the host papilla response, callose deposition, production of phenolic compounds and cell wall strengthening by cross binding.

L5 ANSWER 120 OF 125 CABA COPYRIGHT 2004 CABI on STN
AN 1999:133014 CABA
DN 19991005625
TI Classification and function of **plant disease resistance** genes
AU Yun ChoongHyo; Yun, C. H.
CS Division of Cytogenetics, National Institute of Agricultural Science and Technology, Rural Development Administration, Suwon 441-707, Korea Republic.
SO Plant Pathology Journal, (**1999**) Vol. 15, No. 2, pp. 105-111. 38 ref.
Price: Conference paper; Journal article .
Meeting Info.: Symposium: Molecular plant-microbe interactions, Taejon, Korea Republic, 27 November 1998.
DT Journal
LA English
ED Entered STN: 19991012
Last Updated on STN: 19991012
AB This **review** focuses on the classification and mode of action of **cloned disease resistance** genes. Sections covered are: classification of **resistance** genes; R protein motifs and their function; and R **gene** families and evolution.

L5 ANSWER 114 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1993:445181 CAPLUS
DN 119:45181
TI **Plant disease resistance** genes: interactions with pathogens and their improved utilization to control **plant** diseases
AU Keen, N. T.; Bent, Andrew; Staskawicz, Brian
CS Dep. Plant Pathol., Univ. California, Riverside, CA, 92521, USA
SO Biotechnol. Plant Dis. Control (**1993**), 65-88. Editor(s): Chet, Ilan. Publisher: Wiley-Liss, New York, N. Y.
CODEN: 58XPA9
DT Conference; General Review
LA English
AB A **review** with 97 refs. Topics discussed include: characteristics of **disease resistance** and **disease resistance** genes, how pathogens interact with plants carrying defined **disease resistance** genes, how **plant disease resistance** genes work, current status of **disease** and pest control using **disease resistance** genes, improved **disease** control with **cloned disease resistance** genes, prospects for **cloning disease resistance** genes, and modification of the recognitional specificity of **cloned disease resistance** genes.

L5 ANSWER 113 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1993:445184 CAPLUS
DN 119:45184
TI Transgenic plants resistant to diseases by the detoxification of toxins
AU Yoneyama, Katsuyoshi; Anzai, Hiroyuki
CS Fac. Agric., Meiji Univ., Kawasaki, 214, Japan
SO Biotechnol. Plant Dis. Control (**1993**), 115-37. Editor(s): Chet, Ilan. Publisher: Wiley-Liss, New York, N. Y.
CODEN: 58XPA9
DT Conference; General Review
LA English
AB A **review** with 52 refs. Topics discussed include: pathogenicity and toxigenicity in **plant**, pathogens, pathogenic toxins by wildfire bacteria, **cloning** and anal. of tabtoxin **resistance** genes, introduction of the TTR **gene** into plants, and **resistance** to wildfire **disease** in transgenic plants.

L5 ANSWER 112 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1993:666409 CAPLUS

DN 119:266409
TI Emerging strategies for enhancing crop **resistance** to microbial pathogens
AU Lamb, C. J.; Rvals, J. A.; Ward, E. R.; Dixon, R. A.
CS Plant Bread. Lab., Salk Inst. Biol. Sci., La Jolla, CA, 9203F, USA
SO Current Plant Science and Biotechnology in Agriculture (**1993**), 15(Biotechnology in Agriculture), 45-60
CODEN: CPBAE2; ISSN: 0924-1949
DT Journal; General Review
LA English
AB A **review** with no refs. There are marked differences in the pattern of host **gene** expression in incompatible **plant** :microbial pathogen interactions compared with compatible interactions that are associated with the elaboration of inducible defenses. Constitutive expression of genes encoding a chitinase or a ribosome-inactivating protein in transgenic plants confers partial protection against fungal attack, and a large repertoire of such antimicrobial genes has been identified for further manipulation. In addition, strategies have emerged for the manipulation of multigenic defenses, such as lignin deposition and synthesis of phytoalexin antibiotics by overexpression of genes encoding rate-determining steps, modification of transcription factors or other regulatory genes, and engineering production of novel phytoalexins by interspecies transfer of biosynthetic genes. The imminent **cloning** of **disease resistance** genes, further mol. dissection of stress signal perception and transduction mechanisms, and identification of genes that affect symptom development should provide attractive opportunities for enhancing crop protection. Combinatorial integration of these novel strategies into ongoing breeding programs should make an important contribution to effective, durable field **resistance**.

L5 ANSWER 110 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1994:50079 CAPLUS
DN 120:50079
TI Avirulence genes of the tomato pathogen Cladosporium fulvum and their exploitation in molecular breeding for **disease**-resistant plants.
AU De Wit, Pierre J. G. M.; Van Den Ackerveken, Guido F. J. M.; Vossen, Paul M. J.; Joosten, H. A. J.; Cozijnsen, Ton J.; Honee, Guy; Wubben, Jos. P.; Danhash, Nadia; Van Kan, Jan A. L.; et al.
CS Dep. Phytopathol., Agric. Univ. Wageningen, Wageningen, 6709 PD, Neth.
SO Developments in Plant Pathology (**1993**), 2(Mechanisms of Plant Defense Responses), 24-32
CODEN: DPPAEF; ISSN: 0929-1318
DT Journal; General Review
LA English
AB A **review** with 22 refs., including the authors' own works. Avirulence genes and their products of C. fulvum were isolated and characterized. Avirulence genes which encode race-specific elicitors interact with the products of complementary **resistance** genes in the host **plant**, resulting in hypersensitive and other defense responses. Avirulence **gene** avr9 of C. fulvum is the 1st fungal avirulence **gene** that has been **cloned**. Regulation of this **gene** was studied in vitro and in planta. In vitro, the **gene** is induced under low N conditions, and in planta it is highly expressed around the vascular tissue. Avirulent races carrying the avr9 **gene** become virulent on Cf9 genotypes of tomato, after disruption of avr9. Application for engineering **disease**-resistant crop plants, is discussed.

L5 ANSWER 107 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:371752 CAPLUS
DN 122:206164
TI Piece de **resistance**: novel classes of **plant disease resistance** genes
AU Dangl, Jeffery L.
CS Max-Delbrueck-Lab., Cologne, 50829, Germany
SO Cell (Cambridge, Massachusetts) (**1995**), 80(3), 363-6
CODEN: CELLB5; ISSN: 0092-8674
PB Cell Press
DT Journal; General Review
LA English
AB A **review** with 31 refs. The long-awaited **cloning** of a handful of **plant disease resistance** (R) genes foreshadows rapid development in understanding key mol. components of **plant**-pathogen interactions. The 4 newly described R genes are RPS2 from Arabidopsis (**resistance** to Pseudomonas syringae expressing avrRpt2), N from tobacco (**resistance** to tobacco mosaic virus), Cf-9 from tomato (**resistance** to the leaf fungal pathogen Cladosporium fulvum carrying avr9), and L6 from flax (**resistance** to the corresponding leaf rust fungal race). The structures and a speculative model for mechanism of action of these new LRR-containing proteins and of Pto-or Fen-like kinases is discussed.

L5 ANSWER 106 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:490908 CAPLUS
DN 122:257176
TI Isolation of **disease resistance** genes from crop plants
AU Michelmore, Richard W.
CS Univ. California, Davis, CA, USA
SO Current Opinion in Biotechnology (**1995**), 6(2), 145-52
CODEN: CUOBE3; ISSN: 0958-1669
PB Current Biology
DT Journal; General Review
LA English
AB A **review** with 57 refs. The recent **cloning** of several **resistance** genes from diverse **plant** species, in combination with various tech. advances, has provided new opportunities for accessing the great diversity of **disease resistance** genes in crop plants. Many **resistance** genes probably belong to clusters of large multigene families encoding receptor-like proteins that have evolved to have different specificities. The isolation of genes from crop species is being facilitated by continuing tech. improvements to methods for the saturation of markers within genomic regions containing **resistance** genes, for the **cloning** and characterization of large genomic fragments, and for efficient complementation. The primary limitation to **cloning resistance** genes with known specificities will be the genetic definition of the targeted **gene**.

L5 ANSWER 105 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:545086 CAPLUS
DN 123:134035
TI Molecular genetics of **plant disease resistance**
AU Staskawicz, Brian J.; Ausubel, Frederick M.; Baker, Barbara J.; Ellis, Jeffrey G.; Jones, Jonathan D. G.
CS Dep. Plant Biol., Univ. California, Berkeley, CA, 94720, USA
SO Science (Washington, D. C.) (**1995**), 268(5211), 661-7
CODEN: SCIEAS; ISSN: 0036-8075
PB American Association for the Advancement of Science
DT Journal; General Review
LA English
AB A **review**, with 64 refs. **Plant** breeders have used **disease resistance** genes (R genes) to control **plant disease** since the turn of the century. Mol. **cloning** of R genes that enable plants to resist a diverse range of pathogens has revealed that the proteins encoded by these genes have several features in common. These findings suggest that plants may have evolved common signal transduction mechanisms for the expression of **resistance** to a wide range of unrelated pathogens. Characterization of the mol. signals involved in pathogen recognition and of the mol. events that specify the expression of **resistance** may lead to novel strategies for **plant disease** control.

L5 ANSWER 101 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:650104 CAPLUS
DN 123:133974
TI Isolation and **cloning** of **plant disease resistance** genes
AU Young, Nevin Dale
CS Department Plant Pathology, University Minnesota, St. Paul, MN, 55108, USA
SO Mol. Methods Plant Pathol. (**1995**), 221-34. Editor(s): Singh, Rudra P.; Singh, Uma S. Publisher: Lewis, Boca Raton, Fla.
CODEN: 61MJAY
DT Conference; General Review
LA English
AB A **review** with 91 refs.

L5 ANSWER 99 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:1948 CAPLUS
DN 124:50589
TI **Plant disease resistance** genes: unraveling how they work
AU Hammond-Kosack, Kim E.; Jones, Jonathan D. G.
CS Sainsbury Laboratory, John Innes Centre, Norwich, NR4 6NL, UK
SO Canadian Journal of Botany (**1995**), 73(Suppl. 1, Sect. A-D, Fifth International Mycological Congress, Sect. A-D, 1994), S495-S505
CODEN: CJBOAW; ISSN: 0008-4026
PB National Research Council of Canada
DT Journal; General Review
LA English
AB A **review** with 76 refs. **Resistance** (R) genes confer on a **plant** the ability to defend itself following microbial attack. Each R **gene** exhibits an extreme specificity of action and is only effective against a microbe that has the corresponding functional

avirulence (Avr) **gene**. This article reviews the strategies and exptl. approaches deployed to understand the mol. events underlying the specificity of action of various tomato Cf **resistance** genes that results in incompatibility to the fungal pathogen Cladosporium fulvum. Topics covered include the clustering of Cf genes, the biol. of Cf-dependent incompatibility, the map-based and transposon tagging approaches used to **clone** the Cf-2 and Cf-9 genes, resp., identification by mutagenesis of other **plant** loci required for full Cf-9 mediated **resistance**, the expression of a functional Avr9 **gene** in planta and its lethal consequences to Cf-9 containing plants, the physiol. and mol. host responses to C. fulvum and AVR elicitor challenges and some genetic approaches to ascertain the crucial components of the defense response.

L5 ANSWER 97 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:61538 CAPLUS
DN 124:112250
TI **Gene**-encoded antimicrobial peptides from plants
AU Cammue, Bruno P. A.; De Bolle, Miguel F. C.; Schoofs, Hilde M. E.; Terras, Franky R. G.; Thevissen, Karin; Osborn, Rupert W.; Rees, Sarah B.; Broekaert, Willem F.
CS F. A. Janssens Laboratory of Genetics, Catholic University of Leuven, Leuven, B-3001, Belg.
SO Ciba Foundation Symposium (**1994**), 186, 91-106
CODEN: CIBSB4; ISSN: 0300-5208
DT Journal; General Review
LA English
AB A **review** and discussion with 30 refs. On the basis of an extensive screening of seeds from various **plant** species, several different antimicrobial peptides have been isolated and characterized. They were all typified by having a broad antifungal activity spectrum, a relatively low mol. weight (3-14 kD), a high cysteine content and a high isoelec. point (pI > 10). With respect to their amino acid sequence, these peptides can be classified into six structural classes. Synergistic enhancement (up to 73-fold) of antimicrobial activity was demonstrated in some combinations of peptides belonging to different classes. CDNA **clones** corresponding to different antifungal peptides were isolated and used to transform tobacco plants. Exts. of these transgenic plants showed higher (up to 16-fold) antifungal activity than untransformed control plants. Such antimicrobial peptides may find applications in mol. breeding of plants with increased **disease resistance**.

L5 ANSWER 90 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1997:595859 CAPLUS
DN 127:231864
TI Molecular basis of **resistance** to **disease** in plants: Structure and function of **plant disease resistance** genes
AU Lehmann, Przemyslaw
CS Instytut Genetyki Roslin, Polska Akademia Nauk, Poznan, Pol.
SO Postepy Biologii Komorki (**1997**), 24(2), 99-125
CODEN: PBKODV; ISSN: 0324-833X
PB Fundacja Biologii Komorki i Biologii Molekularnej
DT Journal; General Review
LA Polish
AB A **review** with 91 refs. Recent advances in our knowledge of **plant** defense mechanisms concern the isolation and characterization of **resistance** genes against bacterial, fungal and viral pathogens. Mol. **cloning** of those genes that enable plants to resist a diverse range of pathogens has revealed that the proteins encoded by these genes have several features in common. The possible regulation of these genes is discussed.

L5 ANSWER 72 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:53994 CAPLUS
DN 132:205411
TI **Plant disease resistance**: progress in basic understanding and practical application
AU Keen, N. T.
CS Department of Plant Pathology, University of California, Riverside, CA, 92521, USA
SO Advances in Botanical Research (**1999**), 30, 291-328
CODEN: ABTRAJ; ISSN: 0065-2296
PB Academic Press
DT Journal; General Review
LA English
AB A **review** with many refs. Major advances have occurred over the past 15 yr in understanding the mol. basis of factors determining **plant resistance** to pathogens. Several preformed structural and chemical factors have been proven to be important **resistance** factors unless pathogens overcome them. Progress has also occurred in

understanding active **disease** defense in plants, collectively called the hypersensitive response (HR). An important milestone was the **cloning** and characterization of avirulence genes from fungal, bacterial and viral pathogens that direct production of specific elicitors. These elicitors initiate the activation of **plant** defense response genes only in cultivars carrying the matching or complementary **disease resistance** genes. Several of these **plant resistance** genes have been **cloned** and most contain leucine-rich-repeat (LRR) domains that are required for their specificity. Recent data establish that the LRR domains convey specificity for elicitor recognition, but it is possible that other **plant** proteins function as primary receptors for pathogen elicitors. The occurrence of such receptors has been demonstrated in elicitor-binding studies, but few of them have been characterized. Nonetheless, the available data support the elicitor-receptor hypothesis stating that plants carrying a particular **resistance gene** have high-affinity receptors specific for the cognate elicitor. Despite these advances in our basic understanding of **disease resistance** in plants and the emergence of promising rationales for improved **disease** control, relatively little use has yet occurred in practical agriculture. It is likely, however, that several strategies now under development will have widespread significance on **plant disease** control in the next century. (c) 1999 Academic Press.

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ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 70 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:87205 CAPLUS
DN 132:248498
TI Genes involved in **plant**-pathogen interactions
AU Buell, C. Robin
CS Institute for Genomic Research, Rockville, MD, 20850, USA
SO Induced Plant Defenses against Pathogens and Herbivores (**1999**), 73-93. Editor(s): Agrawal, Anurag A.; Tuzun, Sadik; Bent, Elizabeth. Publisher: American Phytopathological Society, St. Paul, Minn. CODEN: 68PSAN
DT Conference; General Review
LA English
AB A **review** with 84 refs. Plants can utilize an array of biochem. mechanisms to protect themselves against the viral, bacterial, fungal, and nematode pathogens that assault them in the phylloplane and rhizosphere. The response by the **plant** to a potential pathogen can be envisioned in three phases: first, the pathogen is recognized by the **plant**, second, the appropriate signal is transmitted to the host transcriptional and translational machinery, and third, the synthesis and/or release of mols. that impede pathogen growth and development. The central hypothesis governing specificity in **disease resistance** is the **gene**-for-**gene** model as proposed by H. H. Flor in the 1940s. This model proposes that the interaction between a single **plant resistance gene** product with its complementary avirulence **gene** product governs the outcome of the interaction and that the dominant alleles mediate incompatibility (**resistance**). In 1984, the first pathogen avirulence **gene** was **cloned**, providing mol. evidence to support the **gene**-for-**gene** model. Nearly a decade later, using genetic and mol. analyses, the first complementary **plant resistance** genes were **cloned**. Sequence data of these **resistance** genes has revealed a surprising conservation of sequence among the angiosperms, regardless of the host or pathogen taxonomic classification, suggesting conservation among plants in not only the recognition, but also the subsequent signaling mechanisms that lead to **resistance**. Indeed, several genes involved in signaling of pathogen defense responses have been shown to function in **resistance** to multiple pathogens. In addition, genes involved in the synthesis of antimicrobial factors have been able to provide enhanced **resistance** in heterologous systems, consistent with the hypothesis that the basic mechanism(s) by which pathogen ingress is arrested is conserved, to a large part, among **plant** species.

RE.CNT 84 THERE ARE 84 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 64 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:710340 CAPLUS
DN 134:217639
TI Recent advances in **cloning** of **plant disease** resistant **gene**
AU Jia, Jianhang; Wang, Bin
CS Institute of Genetics, Chinese Academy of Sciences, Beijing, 100101, Peop. Rep. China
SO Shengwu Gongcheng Jinzhan (**2000**), 20(1), 21-26

CODEN: SGJHA2; ISSN: 1003-3505
PB Zhongguo Kexueyuan Wenxian Qingbao Zhongxin
DT Journal; General Review
LA Chinese
AB A **review** with 49 refs. As the development of mol. biol. and relative techniques, the mol. mechanism of the interaction of **plant** and its pathogen is becoming more and more clear. After briefly introducing the subject of Hypersensitive Response (HR) and Systemic Acquired **Resistance** (SAR), this **review** provides an overview of the progress in **plant disease** resistant **gene cloning**, including the strategy of transposon tagging, map-based **cloning** etc. Also provides an overview of the conserved structural components that are predicted in the proteins encoded by **plant disease** resistant **gene**. The engineering of **plant disease** resistant **gene** is also discussed in this **review**.

L5 ANSWER 62 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:744100 CAPLUS
DN 134:97815
TI **Resistance** genes and the perception and transduction of elicitor signals in host-pathogen interactions.
AU Boller, Thomas; Keen, Noel T.
CS Botanisches Institut der Universitat, Basel, CH-4056, Switz.
SO Mechanisms of Resistance to Plant Diseases (**2000**), 189-229. Editor(s): Slusarenko, A. J.; Fraser, R. S. S.; Van Loon, L. C. Publisher: Kluwer Academic Publishers, Dordrecht, Neth.
CODEN: 69ANEC
DT Conference; General Review
LA English
AB A **review** with many refs. Plants lack immune systems of the types known in animals, but nevertheless are resistant to most potential pathogens. Like in animals, **resistance** is based on an active response of the **plant** to pathogen attack. Activated defense responses most often culminate in the so-called hypersensitive response in which cells exposed to the pathogen undergo rapid cell death and prevent further invasion. Also similar to animals, this reaction depends primarily on recognition of the invading pathogen. **Disease resistance** genes play a pivotal role in the recognition process. Several **resistance** genes have been **cloned**, and current evidence suggests that their products phys. interact with the products of microbial avirulence genes, named specific elicitors. In addition to these highly specific recognition phenomena, based on matching genes in **plant** and pathogen, plants also have exquisitely sensitive perception systems for so-called general elicitors, i.e. substances characteristic of whole groups of micro-organisms, such as microbial glycopeptides, cell wall fragments, and sterols. The substances recognized occur not only in pathogens, but also in saprophytes and even in symbiotic microorganisms. Chemoperception of these substances may trigger only some reactions associated with defense responses, thus providing an early warning for the presence of a foreign organism, or contribute substantially to reactions associated with the hypersensitive response, depending on **plant** species and developmental stage. Transduction of microbial signals in plants has been extensively studied after treatment with general elicitors. It remains an open question, however, how the signals generated by the interaction between avirulence **gene** products and **resistance gene** products are related to those generated by the perception of general elicitors.
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ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 59 OF 125 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:801365 CAPLUS
DN 134:160151
TI **Plant resistance** to pathogenic agents
AU Pautot, Veronique; Robaglia, Christophe; Pernollet, Jean-Claude
CS Chargee de recherches INRA, Laboratoire de biologie cellulaire, Versailles, 78026, Fr.
SO Phytoma (**1999**), 521, 10-15
CODEN: PYTOAU; ISSN: 0370-2723
PB Editions Le Carrousel
DT Journal; General Review
LA French
AB A **review** with 17 refs. An understanding of « natural defense » mol. mechanisms will help to increase their effectiveness **Plant resistance** mechanisms against attacks by pathogenic agents use both preventive systems and also systems which are triggered by an attack. Genetically-acquired **resistance** (until now empirically selected) is often the expression of specific genes, the result of **gene**-for-**gene** interaction between a virulent genes of the pathogen (first successful **cloning** in 1985) and **resistance** genes of the **plant** (first successful

cloning in 1993). These discoveries pave the way to faster and better-targeted varietal selection of plants by identifying useful genes and using genetic engineering methods to introduce them at an earlier stage in the **plant** development process. There are a number of different types of defense reactions (hypersensitivity being the most common). Some of these reactions are triggered by the secretion of elicitor substances, several of which have been identified. It is therefore known that plants secrete pathogen-related proteins and antibiotics, phytoalexins (of which there are around 300 known examples). The application of an elicitor substance triggers the natural defense mechanism known as systemic acquired **resistance** (SAR). This mechanism causes the **plant** to produce messenger substances, in particular salicylic acid and jasmonic acid. These discoveries help to explain the activity of certain previously-known compds. (phytoalexins, salicylic acid, fosetyl-Al, ethylene, etc.). They also make it possible to envisage the protection of plants using natural defense stimulators (NDS), i.e. substances which stimulate the natural defense mechanism, or even by integrating genes which are coded to produce these substances, into the **plant**'s genome. However, further study and certain precautions are required.

L5 ANSWER 53 OF 125 CAPLUS
AN 2001:122520 CAPLUS
DN 135:252368
TI **Cloning** of the **plant resistance** genes and their structure and function
AU Luo, Min; Zhu, You-lin; Yu, Chao; Wu, Zhong-wei; Zou, Yan
CS Department of Biology, Nanchang University, Nanchang, 330047, Peop. Rep. China
SO Yichuan (**2000**), 22(6), 429-433
CODEN: ICHUDW; ISSN: 0253-9772
PB Yichuan Zazhi Bianjibu
DT Journal; General Review
LA Chinese
AB A **review** with 34 refs. In the last ten years, twenty-two **resistance** genes have been **cloned** from nine kinds of plants by either map-based **cloning** or transposon tagging successfully. The proteins encoded by these **resistance** genes usually contain one or more following conserved domains, such as LRR, STK, NBS, LZs, TIR and so on, and probably mediate the signal recognition, production, and transmission during expression of **plant disease resistance**.

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